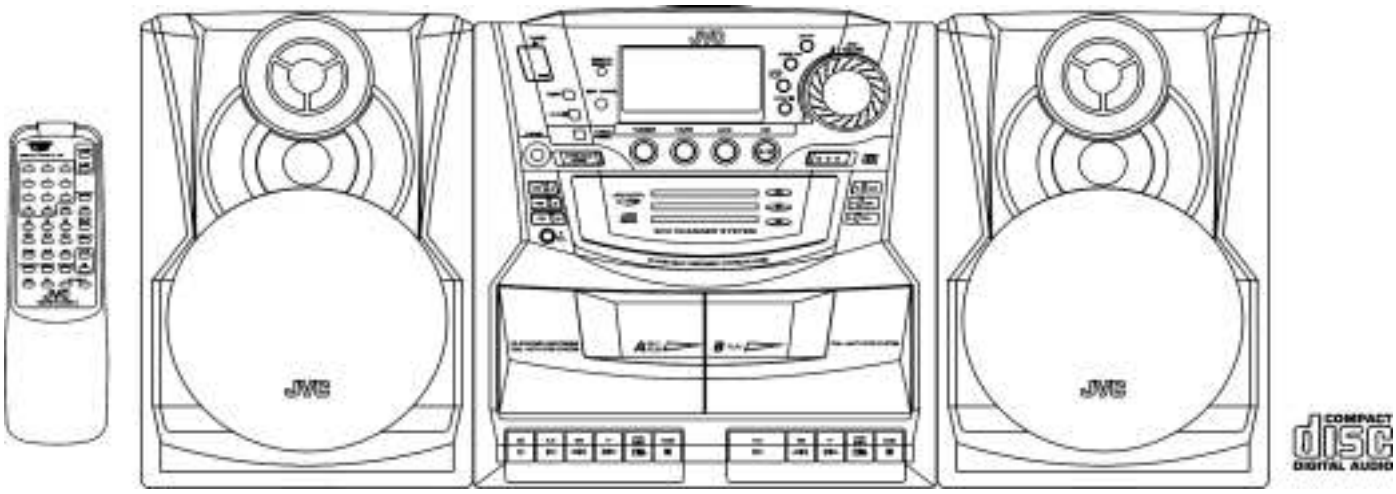
JVC

SERVICE MANUAL

CD PORTABLE COMPONEMT SYSTEM

PC-XC350



Unit No.
SP-PCXC350

Unit No.
SP-PCXC350

Unit No.
SP-PCXC350

Area Suffix
J-----USA
C-----CANADA

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No. xxxxx

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OCT 2001

Safety Precautions

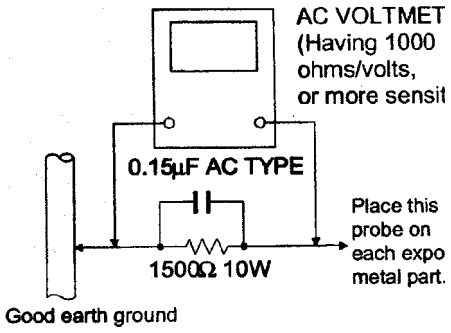
1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made ti the original design unless authorised in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personel only.

2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many eletrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtain by using replaement components rated for higher voltage, the Parts List of Service manual. Electrical components having such features ate identified by the shading on the schematics and by ( ) on the parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service manual may create shock, fire, or other hazards.

4. The leads in the products are routed and dressed with ties, clamps, tubing's, barriers and the like to be separated from live parts, high temperatures parts, moving parts and/or sharp edges for the prevention of electric shcok and fire hazard. When service is required, the original leat routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

5. Leakage current check (Electrical Shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metap Parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isloation transformer during this check.
   Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each ecposed metal parts of the cabinet, particularly and exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)
   Alternate check method
   Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitvity in the following manner. Connect a 1,500 ohm 10W resistor paralleled by a 0.15uF AC-type capacitor between an exposed metal part and a known good earth ground.
   Measure the AC voltage across the resistor with the AC voltmeter.
   Move the resistor connection to each exposed metal part, particularly and exposed metal part having a return path to te chassis and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Voltage measured Any must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. It mains voltage selector is provided, check setting for local voltage.

CAUTION **Burrs formed during moulding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of performing repair of this system.**

Preventing static electricity

Electrostatic discharge (ESD), which occurs when static electricity stored in the body, fabric, etc. is discharged, can destroy the laser diode in the traverse unit (optical pcikup). Take care to prevent this when performing repairs.

1.1. Grounding to prevent damage by static electricity

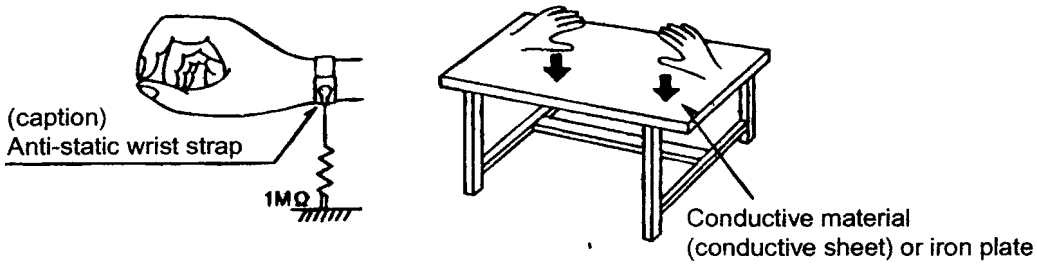
Static electricity in the work area can destroy the optical pickup (laser diode) in devicessuch as DVD players.
Be careful to use proper grounding in the area where repairs are being performed.

1.1.1. Gound the workbench

1. Ground the workbench by laying conductive material (such as a conductive sheet) or an iron plate over it before placing the traverse unit (optical pickup) on it.

1.1.2. Ground yourself

1. Use an anti-static wrist starp to release and static electricity built up in your body.



1.1.3. Handling the optical pcikup

1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are storted. After replacement, return the shorted parts to their original condition. (Refer to the text.)

2. Do not use a tester to check the condition of the laserdiode in the optical pickup. The tester's internal power source can easily destory the laser diode.

1.2. Handling the traverse unit (optical pickup)

1. Do not subject the traverse unit (optical pcikup) to strong shocks, as it is a sensitive, complex unit.

2. Cut off the shorted part of the flexible cable using nippers, etc. after replacing the optical pickup. For specific details, refer to the replacement procdeure in the text. Remove the anti-static pin when replacing the traverse unit. Be careful not to take too long a time when attaching itto the connector.

3. Handle the flexible cable carefully as it may break when subjected to strong force.

4. It is not possible to adjust the semi-fixed resistor that adjusts the laser power. Do not return it.

Disaeesmbly method

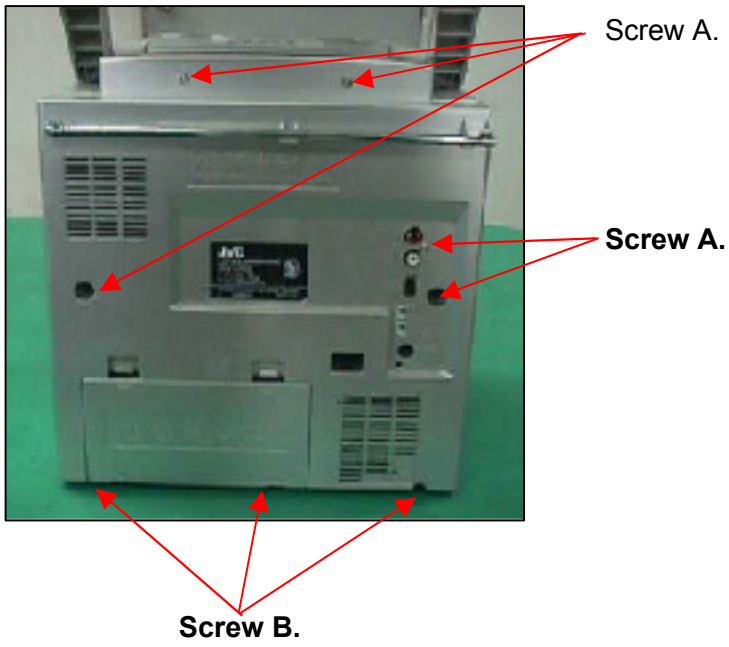
■ Removing the rear panel

1. From behind the body, remove the eight screws A retaining the rear panel.

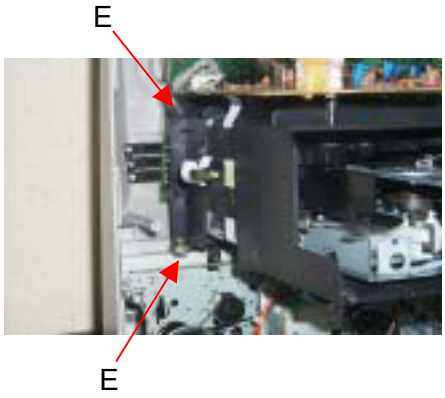
2. Then remove the two screws B retaining the rear panel.

3. Take out the rear panel from the body.

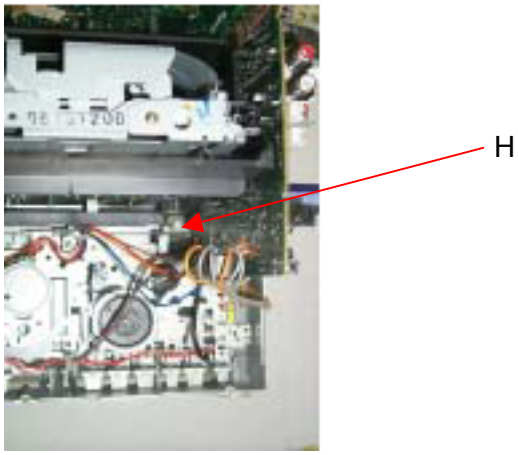
   Note:
   Be careful of the FM antenna white wire, it is connection with the tuner PCB up side.
   You can directly take out from the tuner PCB.
   When you re-assembly the product, plug the FM antenna white wire into the Tuner PCB's "FM ANT" position.

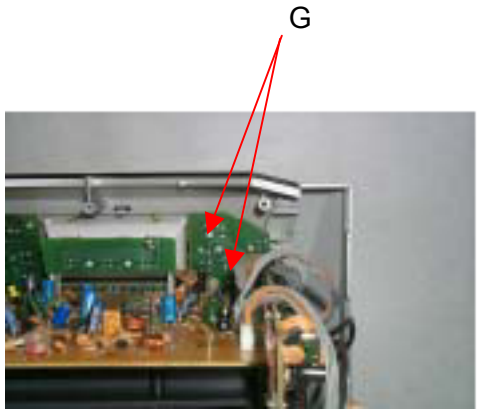


■ Removing the CD mechanism



1. Remove the rear panel
2. Removing the two screws E retaing the 3CD mechanism cover.
3. Removing the crew F retaing the control PCB left side.
4. Remove the srews G retaing on the 3CD mechanism cover & the two screws H retaining on the control PCB





■ Removing the Main PCB

1. Remove rear panel
2. Remove the 3CD mechanism
3. Remove the four screws attaching the main PCB.

Adjustment method

■ Measurement instruments required for adjustment

1. Low frequency oscillator
   This oscillator should have a capacity to output 0dB to 600 at an oscillation frequency of 50Hz-20KHz
2. Electronic voltmeter
3. Distorion meter
4. Frequency counter
5. Wow & flutter meter
6. Test tape
   TCC-112: tape speed and running unevenness (3KHz)
   TCC-140: Reference level (1KHz)
   TCC-182A: Head angle (8KHz), playback frequency characteristics (1KHz) and dubbing frequency charateristics (125Hz and 8KHz)
7. Black tape
   TYPE I : TDK-D60
8. Torque gauge : For play and tension
   FWD(CT-120m), and FF/REW(CT-F)

■ Measurement conditions

Power supply voltage----------AC 120V (60Hz)
Reference output----------Speaker : 0.866V/3
Headphone : 0.245V/32
Reference frequency and -----1KHz, AUX : 450mV input level
Input for confirming recording and-----CD : -10dB playback characteristics
Measurement output terminal-----Speaker CN301
*Load resistance----------3

■ Radio Input signal

AM frequency ----------400Hz
AM modulation----------30%
FM frequency ----------1 KHz
FM frequency deviation --------22.5KHz

● Tuner section

Voltage applied to tuner ----- +B:DC 5.7V
VT: FM 2~5v / am 1.5~7.5v
Reference measurement ----- 26.1mV(0.866/3 output
Input positions ----- AM : Standard loop antenna
FM : TP1 (hot) and TP2 (GND)

● Standard measurement position of volumett

Bass ---------- Off
EQ ---------- Flat
UP and down adjustment of volume ----- Vol : 16

Precautions for measurement

1. Direct connect to the IF sweeper output side and 1 UF and 22 Kohm connect to the sweeper input side. Same as FIG. 1.

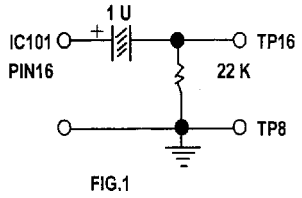


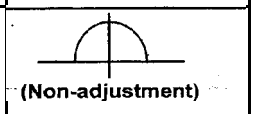
FIG.1

2. The IF sweeper output level should be made as low as possible within the adjusttable range.
3. Since the IF sweeper is a fixed device, there is no need to adjust this sweeper.
4. Since a ceramic oscillator is used, there is no need to perform and MIX adjustment.
5. Since a fixed coil is used, there is no need to adjust the FM tracking.
6. The input and output earth systems are separated. In case of simuitaneously measuring the voltage in both of the input and output systems with an electronic voltmeter for two channels, therefore, the earth should be connected particularly carefully.
7. In the case of BTLconnection amp., the minus terminal of speaker is not for earthing. Therefore, be sure not to connect any other earth terminal to this terminal. This system is of an BTL system.
8. For connecting a dummy resistor when measuring the output, use the wire with a greater code sze.
9. Whenever any mixed tape is used, use the band pass filter (DV-12V)

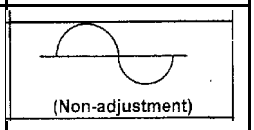
TUNER ADJUSTMENT

use a plastic screews driver for adjustments.
Adjust the intermediate frequency of AM and FM to the frequency of cermic filter.
Supply voltage: DC 12.0V
Speaker impedance: 3 OHMS
Function switch: RADIO

a. AM adjustment BAND SELECT SWITCH : AM

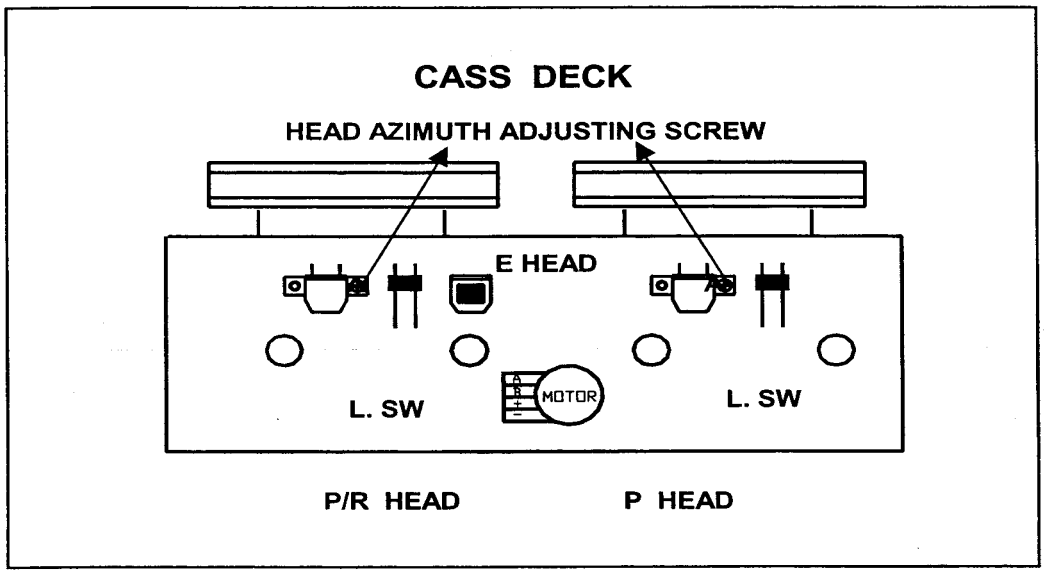
ste	Adjusting circuit	Tuning Frequency	Input Connection		Output Connection		Adjustment parts	VTVM Oscilloscope
			Measurement	input	Measurement	output		
1	IF (450 KHz)	1000 KHz	AM Sweep Generator	Loop ANT	VTVM Oscilloscope	TP16 (H) TP 8 (E)	T103	 (Non-adjustment)
2	Tuning Coverage	530 KHz			Digital Voltmeter	TP16 (H) TP 8 (E)	T102	1.2+/-0.05V
3		1710 KHz						Confirm 7.0+/-0.5V
4	Tracking	600 KHz	Am signal Generator	Loop ANT	VTVM Oscilloscope	TP12 (L) TP11 (R)	MW COIL CT102	
5		1500 KHz						Maximum

b. FM Adjustment BAND SELECT SWITCH : FM FM Dummy Antenna : 75 ohm unbalance

ste	Adjusting circuit	Tuning Frequency	Input Connection		Output Connection		Adjustment parts	VTVM Oscilloscope
			Measurement	input	Measurement	output		
1	IF (10.7 MHz)	98.0 MHz	FM Sweep Generator	TP4 (H) TP8 (E)	VTVM Oscilloscope	TP16 (H) TP8(E)	T104	 (Non-adjustment)
2	Tuning Coversage	87.5 MHz			Digital Voltmeter	TP16 (H) TP8(E)		Confirm 1.4+/-0.1V
3		108 MHz	--	--			L104	5.6+/-0.5V
4	Tracking	90.0 MHz	FM Signal Generator	FM ANT TP1(E)	VTVM Oscilloscope	TP12 (L) TP11 (R)	L103	Confirm with being near by effective sensitvity
5		106.0 MHz						

ARRANGEMENT OF ADJUSTMENTS POSITION

CASSETTE MECHANISM SECTION



A DECK **B DECK**

■ Tape recorder section

Items	Measurement conditions	Measurement method	Standard Values	Adjusting position
Confirmation of head angle	Test tape : TCC-182A(8KHz) Measurement output terminal : Speaker terminal Speaker R/L (Load resistance: 3 : Headphone terminal	1 Playback the test tape TCC-182A (8KHz) 2 With the recording & playback mechanism, adjust the head azimuth screw so that the left and right output leavers become maximum, After adjustment, lock the head azimuth at least by half turn.	Maximum output	Adjust the head azimuth screw only
Confirmation of tape speed	Test tape : TCC-112 (3KHz) Measurement output terminal : Headphone terminal	Adjust VR401 so that the frequency counter reading becomes 3,010Hz +/-15Hz when playing back the test tape TCC-112 (3KHz) with playback and recording mechanism after ending forward winding of the tape.	Tape speed of deck :3,010Hz +/-15Hz	VR401

■ Referemce Values for Confirmation Items

Items	Measurement conditions	Measurement method	Standard Values	Adjusting position
Wow & flutter	Test tape :TCC-112(3KHz) Measurement output terminal :Headphone terminal	When the test tape TCC-112 (3KHz) has been played back with the recording and playback mechanism at the beginning of forward winding, the frequency counter reading of wow & flutter should be 0.25% or less (WRMS).	0.25% or less (WRMS)	

■ Electrical Performance

Items	Measurement conditions	Measurement method	Standard Values	Adjusting position
Adjustment of recording blas current (Reference Value)	Mode: Playback mode Recording mode Test tape TDK-D60 Measurement output terminal : Both recording and headphone terminals	1 With the recording and playback mechanism, load the test tapes TDK-D60, and set the mechanism to the recording and pausing condition in advance. 2 After connecting 100 in series to the recorder head, measure the blas current with a valve voltmeter at both of the terminals	TDK-D60 4.5 uA +/-0.5uA	
Adjustment of recording and palyback frequency characteristics	Reference frequency :1KHz and 8KHz (REF.:-10dB) Test tape TDK-D60 Measurement input terminal : OSC IN	1 with the recording and playback mechanism, load the test tapes (TDK-D60) and set the mechanism to the recording and pausing condition in advance 2 While repetitively inputting the reference frequency signal of 1KHz and 8KHz from OSC IN, record andplayback the tape. 3 While recording and playback the test tape Lch and Rch so that the output deviation between 1KHz and 8KHz from -1dB +/-2dB	Output deviation between 1KHz and 8KHz :-1dB +/-2dB	

■ Reference Values for Electrical Function Confirmation Items

Items	Measurement conditions	Measurement method	Standard Values	Adjusting position
Recording blas frequency	Playback Test tape TDK-D60 Measurement terminal : BIAS TP on P.C. board	1 While changing over t and form BIAS 1 and 2, confirm that the frequency is changed. 2 With the recording and playback mechanism, load the test tape. (TDK-D60), and set the mechanism to the recording and pausing condition in advance. 3 Confirm that the BIAS TP frequency on the P.C. board is 64KHz +/-6KHz	64KHz +/-6KHz	T201

Flow of functional operation until TOC read

Power ON → Power Key → Slider turns REST SW ON.

Check Point: Check that the voltage at the pin 17 of CN601 is OV (a monument)?

Slider turns REST SW ON. → Automatic tuning of TE offset

Automatic tuning of TE offset → Laser ON

Laser ON → Check that the voltage at the pin3 of IC601 + side is + 5V?

Laser ON → Detection of disc

Detection of disc → Automatic tuning of Focus offset

Automatic tuning of Focus offset → Automatic measurement of focus A-curve amplitude

Automatic measurement of focus A-curve amplitude → Confirm that the Focus error s-curve signal at the pin16 of IC601 is approx.2V p-p

Automatic measurement of focus A-curve amplitude → Disc is rotated

Disc is rotated → Confirm that the signal from pin24 IC651 is 0V as a accelerated pulse during approx.400ms

Disc is rotated → Focus servo ON (Tracking servo ON)

Focus servo ON (Tracking servo ON) → Automatic measurement of Tracking error amplitude

Automatic measurement of Tracking error amplitude → Confirm the waveform of the Tracking error signal at the pin25 of IC601 (R612) (See fig-1)

Automatic measurement of Tracking error amplitude → Automatic tuning of Tracking error balance

Automatic tuning of Tracking error balance → Automatic tuning of Focus error balance

Automatic tuning of Focus error balance → Automatic tuning of Focus error gain

Automatic tuning of Focus error gain → Automatic tuning of Tracking error gain

Automatic tuning of Tracking error gain → TOC reading

TOC reading → Confirm the eys-pattern at the lead of TP1

TOC reading → Play a disc

■ Tracking error waveform at TOC reading

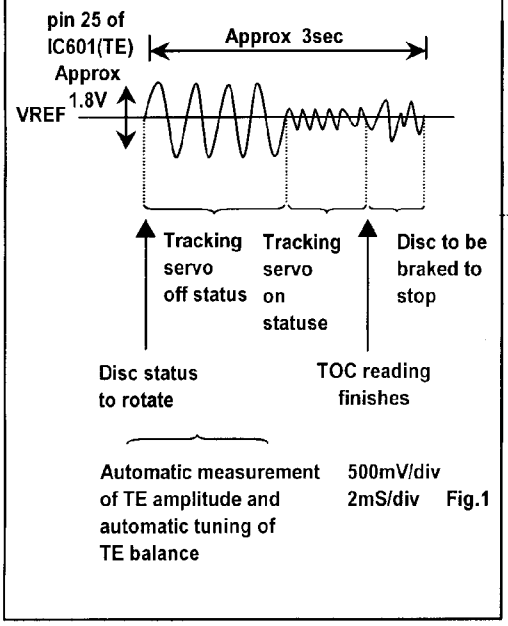
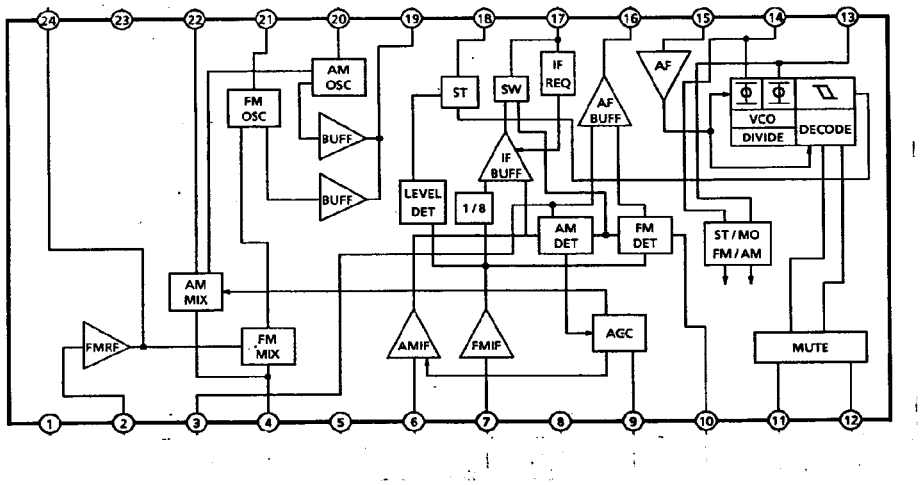


Fig.1

DESCRIPTION OF MAJOR IC

TA2104BN (IC101) AM/FM 1 CHIP TUNER

Block Diagram

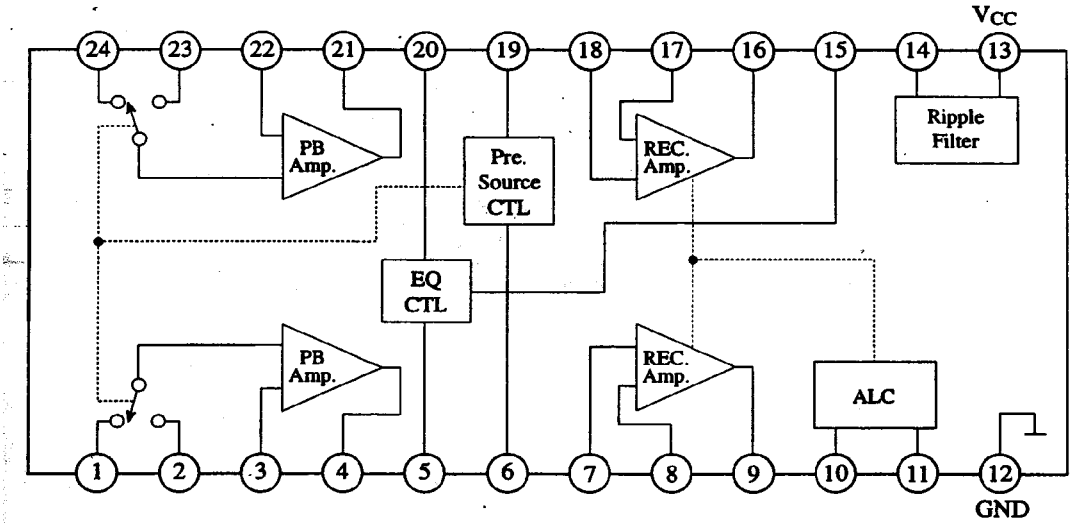


1 . Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	RF GND	-	RF GND	13	LPF2	I	LPF terminal for phase detector & bias terminal AM/FM/SW
2	FM IN	I	FM-RF Signal Input	14	LPF1	I	LPF terminal for Synchronous detector VCO stop terminal
3	AM CUT	-	AM Low Cut	15	MPX IN	I	Multi Plex Signal Input
4	MIX OUT	O	MIX. Output Terminal	16	DET OUT	O	Detection Signal Output
5	VCC	-	Power Supply	17	IF REQ	O	IF REQ
6	AM IF IN	I	Input of AM IF Signal	18	ST LED	-	Stereo Indicator Output
7	FM IF IN	I	Input of FM IF Signal	19	OSC OUT	O	Local Oscillation Signal Output
8	GND	-	GND	20	AM OSC	I	AM Local Oscillation Circuit
9	AGC	-	AGC Voltage Input Terminal	21	FM OSC	I	FM Local Oscillation Circuit
10	QUAD	-	QUAD	22	AM RF IN	I	AM RF Signal Input
11	ROUT	O	Output RCH	23	RF VCC	-	RF Power Supply
12	LOUT	O	Output LCH	24	FM RF OUT	O	FM RF Signal Output

AN7345K (IC201) DUAL RECORD/PLAYBACK PRE-AMPLIFIER

Block Diagram

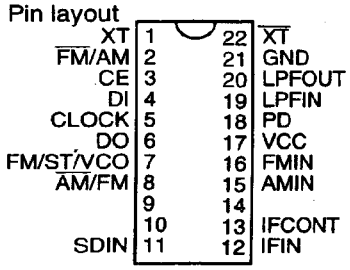


2 . Pin function

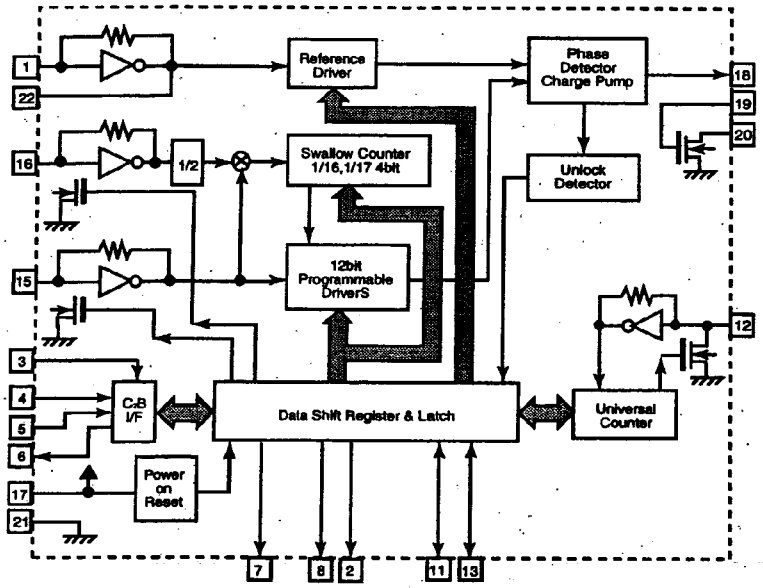
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	IN 1	I	Channel 1 playback AMP Input(1)	13	VCC	-	Positive supply pin
2	IN 1	I	Channel 2 playback AMP Input(2)	14	VREF	-	VREF
3	NF1	-	Channel 1 playback AMP Negative Feedback	15	EQ CTRL	-	Equalizer control
4	OUT1	O	Channel 1 playback AMP Output	16	REC OUT2	O	Channel 2 Rec. AMP Output
5	EQ1	-	Channel 1 Equalizer	17	REC NF2	-	Channel 2 Rec. AMP Negative Feedback
6	TIME	-	Pre-AMP Input Switching time constant	18	REC 2	I	Channel 2 Rec. AMP Input
7	REC1	I	Channel 1 Rec. AMP Input	19	SW	-	Pre-AMP Input Switching control
8	REC NF1	-	Channel 1 Rec. AMP Negative Feedback	20	EQ2	-	Channel 2 Equalizer
9	REC OUT1	O	Channel 1 Rec. AMP Output	21	OUT2	O	Channel 2 playback AMP Output
10	CUT	-	LOW CUT	22	NF2	-	Channel 2 playback AMP Negative Feedback
11	ALC	-	ALC Time constant	23	IN2	I	Channel 2 playback AMP Input(2)
12	GND	-	GND	24	IN2	I	Channel 2 playback AMP Input(1)

■ LC72136N (IC2) : PLL frequency synthesizer

1. Pin layout



2. Block diagram

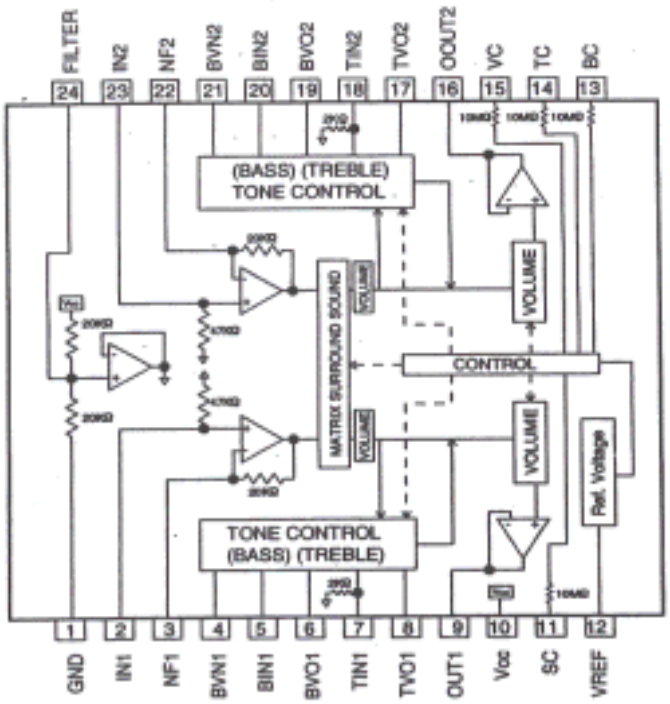


3. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	XT	I	X'tal oscillator connect (75kHz)	12	IFIN	I	IF counter signal input
2	$\overline{FM}$/AM	O	LOW:FM mode	13	IFCONT	O	IF signal output
3	CE	I	When data output/input for 4pin(input) and 6pin(output): H	14		-	Not use
4	DI	I	Input for receive the serial data from controller	15	AMIN	I	AM Local OSC signal output
5	CLOCK	I	Sync signal input use	16	FMIN	I	FM Local OSC signal input
6	DO	O	Data output for Controller Output port	17	VCC	-	Power suplly(VDD=4.5-5.5V) When power ON:Reset circuit move
7	FM/ST/VCO	O	"Low": MW mode	18	PD	O	PLL charge pump output(H: Local OSC frequency Height than Reference frequency. L: Low Agreement: Height impedance)
8	$\overline{AM}$/FM	O	Open state after the power on reset	19	LPFIN	I	Input for active lowpassfilter of PLL
9	LW	I/O	Input/output port	20	LPFOUT	O	Output for active lowpassfilter of PLL
10	MW	I/O	Input/output port	21	GND	-	Connected to GND
11	SDIN	I/O	Data input/output	22	$\overline{XT}$	I	X'tal oscillator(75KHz)

■ BH3852S (IC38) : E.Volume

1. Block diagrams



2. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	GND	-	Connect to GND.	13	BASS	I	Terminal for bass control.
2	IN1	I	Terminal for 1ch volume input.	14	TRE	I	Terminal for treble control.
3	NF1	I	Terminal for gain adjustment of input step AMP.	15	VOL	I	Terminal for volume control.
				16	OUT2	O	Terminal for 2ch volume output.
4–6	BASS1	-	Terminal for connection of 1ch low-frequency filter.	17.18	TRE2	-	Terminal for connection of 2ch high-frequency filter.
7.8	TRE1	-	Terminal for connection of 1ch high-frequency filter.	19–21	BASS2	-	Terminal for connection of 2ch low-frequency filter.
9	OUT1	O	Terminal for 1ch volume output.	22	NF2	I	Terminal for gain adjustment of input step AMP.
10	VCC	-	Terminal for power supply.				
11	LIVE	-	Terminal for surround control.	23	IN2	I	Terminal for 2ch volume input.
12	VREF	O	Terminal for reference voltage output.	24	VSET	-	Terminal for filter.

BLOCK DIAGRAM